EXHIBIT 5

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WASHINGTON**

MICROSOFT CORPORATION, 　　　　　Plaintiff, v. MOTOROLA, INC., MOTOROLA MOBILITY, INC. and GENERAL INSTRUMENT CORPORATION, 　　　　　Defendants.	CIVIL ACTION FILE Case No. 2:10-cv-01823-JLR

EXPERT REPORT OF DR. R. SUKUMAR

July 24, 2012

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I.   Engagement Background

1.   I, R. Sukumar, am the CEO of Optimal Strategix Group, Inc., which is a strategic market research and marketing consulting company. I have served as a consultant for many Fortune 500 companies, helping clients focus on understanding the value of the products they offer and the market's value for attribute improvement. My Curriculum Vitae, including a list of my publications from the last 10 years, is attached as Exhibit C to this report.

2.   I have also served as an expert witness in multiple lawsuits, conducting survey research for cases that have involved consumer confusion and trademark infringement. A list of my recent testifying experiences is included with my Curriculum Vitae.

3.   I have been engaged by Ropes and Gray LLP to serve as an expert for Motorola Mobility, Inc. and General Instrument Corp. ("Motorola"), in the above captioned matters, for the purposes of conducting survey research and understanding usage and valuation of certain features offered in Microsoft's Xbox 360 console.

4.   Specifically, the two features of interest are:

    A. **H.264 decoding capability**: Supports decoding of video available, for example, over the Internet.

    B. **802.11 (Wi-Fi) capability**: Supports connecting to the internet using built-in or external Wi-Fi functionality.   Includes compatibility with b/g/n networks and includes network security functionality

II.   Conjoint Analysis

1.   Conjoint analysis has been used extensively in understanding how the market values improvements in a given feature (Reference 3). The term "conjoint analysis," which is also commonly referred to as "tradeoff analysis," was coined from the words "consider jointly." It has been used in a number of legal cases to assess the importance a given feature (or attribute) has in a customer's decision to buy a product having that feature. The methodology has been used in patent litigations to determine the market's value of improvements resulting from inclusion of a patented feature (Reference 3). (The market's value for the improvement of a feature is also referred to as "MVAI".)

2.   In conjoint analysis, we determine what value a customer places on a particular feature of a product by measuring the partial value ("partworth" utility) of multiple individual features of the product. For example, we measure the value to the customer of the product offered in several combinations, some of which might contain feature 1 (but perhaps not feature 2), some of which might contain feature 2 (but perhaps not feature 1), and some of which might contain both features 1 and 2. We can then use the data we collect to isolate the value to the customer of one particular feature.

3.   We administer Conjoint analysis using a software program developed by Sawtooth Software referred to as "CBC" (Choice-Based Conjoint) (Reference 4,5). We begin by conducting an online survey

of a group of respondents, constituting a sample of the target population of users of the product at issue (here, the Xbox console). During this portion of the survey, we ask respondents to either choose among three displayed product combinations based on preferences in price and feature set or to decline all three options. In each question the respondent is shown a choice set consisting of three product combinations, with each combination having varied improvements in the features shown and a unique associated price. The respondent chooses the preferred option (See Exhibit F). The respondent sees 15 such choice sets. This method has been used for decades in commercial applications. [References 1, 2].

III.   Survey Inputs

There are two main inputs to the survey. The first is the list of features to be tested. The second is the price that end-customers currently pay for an Xbox console. I pursued the following steps to ensure that the feature descriptions and the price used are accurate.

1.   **Step 1:** We were provided, by counsel, with descriptions of the features to be tested.

2.   **Step 2:** We obtained the average retail price for various models of Xbox consoles and took increments of $100 above and below this price as being the values to be considered in the conjoint (tradeoff exercise).

3.   **Step 3:** We identified usage features that consumers desire in Xbox game consoles and identified the terms consumers use to describe those features, such that we could ensure consumers would understand our questionnaires.

> 3a   I instructed my staff to conduct in-depth interviews with current Xbox users and owners. In July of 2012 we conducted a total of 30 interviews, each of approximately 30-45 minutes in length, with a mix of males and females of different ages. Conversations with consumers were open-ended, seeking consumers' opinions about Xbox consoles and details of their experiences with their consoles. The interviewers probed the respondents to better understand how the respondents used Xbox consoles. I have worked with these interviewers before and participated in their training, and am confident that they accurately obtained information about the consumers' experiences and opinions.

> There were two purposes of these interviews. The first purpose was to identify a reasonable set of features for the conjoint analysis so that respondents would feel they were making realistic choices among game console profiles. Because consumers are told to make choices among profiles assuming "all else equal"—as is the standard in conjoint analysis—the set of features does not need to be exhaustive. However, a reasonable set of features makes the choices more realistic and minimizes demand artifacts. (Technically, the additive nature of the utility specification combined with the error term[1] makes it possible to estimate part-worths by

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[1] The utility for a given product profile is assumed to be the sum of the individual features' part-worths plus an error term that reflects the value of unknown factors. Thus, a product with three features (e.g., 1) number of game controllers, 2) hard disk size, and 3) price) will have a total utility that is the sum of each feature's part-worth value (i.e., part-worth for 2 controllers plus part-worth for 4 GB hard-drive plus part-worth for $199.99 sale price)

holding "all else equal.[2]"   Indeed, there are forms of conjoint analysis, called "partial-profile conjoint analysis," that also predict well and that are based on varying only a few features at a time.)   The second purpose was to hear the words and phrases that the consumers use in describing game consoles in order to design the questionnaires so that they employ language commonly used by consumers. For both of these purposes, I was briefed by the interviewers. As per my standard procedures, all interviews were verbal in nature and were not recorded or transcribed.   This was sufficient for my purpose in designing the survey.   None of these respondents were included in the final analysis because they were not asked to complete the conjoint-analysis survey.

3b   Under my direction, the interviewers identified typical game console usage by owners of Xbox consoles. The interviewers then briefed me so that I could select the features and levels to be used in the conjoint analysis. The interviewers informed my selection of the appropriate features to include in CBC and survey questionnaires for each of the H.264 and 802.11 surveys. These interviews were also informative for understanding what consumers perceive to be a reasonable range of features for the various game console features and usages.   This understanding of ranges helped me to identify the appropriate levels of the features to include in the survey.

3c   After having been informed by the comments in the qualitative interviews, I selected the following six features to include in CBC for both the H.264 and the 802.11 surveys: (i) Type of Wi-Fi, if any; (ii) Hard Drive size; (iii) Availability of HDMI Port; (iv) Price; (v) Number of controllers; and (vi) Xbox Live Subscription. The H.264 survey also included four additional features in CBC: (vii) Ability to play games, watch movies and listen to music uninterrupted; (viii) Ability to stream or download HD video content (ix); Decoding Capability; and (x) Ability to watch HD Live Television, HD Movies from USB Ports and Blu-Ray Discs.

3d   Informed by the qualitative interviews, I determined that the chosen features were sufficiently independent among themselves and sufficiently independent from "held constant" features[3] that an additive utility model was appropriate. (Brand (say Xbox or PS3) is not a feature that varies in the conjoint analysis because all game console profiles presented to the consumer were hypothetical Xbox console profiles.   Respondents were instructed: "*The upcoming questions will ask you to make choices among different possible Xbox consoles. Descriptions of some of the features of these Xbox consoles are shown on the next few screens. Please review each feature description carefully before you click "Next" to continue. Assume that all other features of the player are kept the same*".)

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and an unknown that captures all other features not shown in the conjoint exercise. This is known in the field as an additive utility model.

[2] "All else equal" is a term used to explain how any feature not shown in the CBC is assumed to be the same across all possible product profiles.

[3] For example, features like the ability to use a joystick or the inclusion of a specific type of audio port, are independent of the chosen features and are held constant across all choice profiles.

3e   As discussed above, the qualitative interviews my staff conducted were also useful in determining appropriate words and phrases to be used in the survey questionnaires to describe the features of game consoles. By designing our questionnaires to use such terms, we ensured that consumers could understand our descriptions of the levels of the features.

4.   **Step 4:** We developed the survey and designed the conjoint experiment using CBC (Choice Based Conjoint), which is standard methodology for performing such a survey. The survey included both demographic questions and questions asking if, and how, respondents currently use various features.

5.   **Step 5**: The online survey was programmed and made ready for deploying a test run.

6.   **Step 6:** We conducted a pre-test of each of the surveys. A total of 60 pre-test or pilot interviews were conducted, as shown below:

At my direction, experienced interviewers pre-tested the survey questionnaire for 60 people in the United States. To qualify for a pre-test interview, the interviewee was required to currently own an Xbox console. The goal of these evaluations was to ensure that respondents could understand the questions as asked and would answer in an appropriate fashion. These responses were used solely for pre-testing and are not included in the final survey results.

The pre-test interviews themselves are open-ended verbal debriefs of pre-test respondents after the respondents have answered the survey questions. These results were reported to me orally by experienced interviewers who debriefed respondents under my direction. I have worked with these interviewers before, participated in their training, and provided instructions about how to carry out these pre-tests.

Pre-testing continues until respondents are able to answer the survey questions easily, do not find the questions difficult or ambiguous, and feel that their answers represent their opinions. In this instance, 60 total pre-test respondents were sufficient to ensure that the questions were understandable and the choice of answers was appropriate.

Survey	Pilot/Pre-test Interviews
1) H.264	30
2) 802.11	30

Table: 1

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IV.   **Sample**

1. Two separate surveys were fielded, one focused on H.264 and one focused on 802.11. Table: 2 shows the final sample size for each survey:

Survey	Respondents
1) H.264	499
2) 802.11	561

Table: 2

In my opinion and based on my experience, this sample size is robust enough to provide an understanding of market value for attribute improvement as well as current usage rates for these features. Statistical confidence intervals can be expected to be within a range of 3.5% - 5.2% at a 95% confidence level.

2. Respondents for each of the two surveys were randomly drawn from an online panel (or list) maintained by Authentic Response consisting of approximately 4 million people, and were drawn such that the sample outgo (or invitations) to panel participants was balanced to represent the U.S. census in terms of demographics such as age, gender, race, and income. Authentic Response uses panel management practices, such as verification of panel members, to ensure a quality sample of respondents. Specifically, as a member of several trade associations—CASRO (Council of American Survey Research Organizations), MRA (Marketing Research Association), and AMA (American Marketing Association)—Authentic Response follows established industry standards governing the authenticity, reliability, and validity of their databases and the email addresses therein.

3. To ensure that a sufficient sample size completed each of the surveys, we contacted thousands of potential respondents. Table: 3 shows the total number of potential respondents contacted via email and the total number of respondents starting each survey.

Survey	Invitations Sent	Survey Responders
1) H.264	22061	3297
2) 802.11	24319	3590

Table: 3

4. Potential respondents were asked qualifying questions (see Exhibit A) to guarantee that they were the correct targets with the knowledge necessary to answer the survey questions. Specifically, the respondents were included only if they:

4a   Had not participated in a market research study within the past 30 days regarding consumer electronics or gaming consoles;

4b   Owned an Xbox console;

4c   Were responsible for the purchasing decision;

4d   Connected their console to the internet; and

4e Were born before 1996.

5. Table: 4 shows, for each of the two surveys, the number of respondents who (a) completed the survey, (b) were screened out because they did not meet the qualifying criteria and (c) abandoned the study before completing it.

	1) H.264	2) 802.11
a) Completed	499	561
b) Screened/Disqualified	2460	2840
c) Incomplete	158	189
Totals	**3297**	**3590**

Table: 4

6. The respondents who participated in each of the two surveys were compensated for their time with gift certificates. This is a well-known practice to ensure the highest quality of participation.

7. I next compared the demographics of all respondents, including those who were screened out, to the latest US Census data. Weighting procedures were employed to balance the sample to census demographics.[4] These weights were applied to the results discussed in the next section. Attached as Exhibit B is a table comparing demographic information from the 2010 US Census with demographic information for the unweighted group of survey participants (before they were screened/disqualified) and demographic information for the weighted group of survey participants (before they were screened/disqualified).

V. Results of A Survey Measuring Usage and User Valuation of H.264

The results of the survey are divided into two sections. The first section includes data on 1) usage of the Xbox console for various activities such as viewing videos; 2) usage of Xbox Live; and 3) desirability ratings of certain features included in the survey (such as the ability to decode H.264-enabled video content). The second section reports the market's value for the improvement of a feature (MVAI)—also known as the market's "willingness to pay" for that feature—for both H.264 and 802.11.

1. Usage Results

1a Table: 5 identifies, for each of three devices (an Xbox console – connected to TV, a Blu-Ray player, and a Smart TV), the percentage of respondents that use a given device for the identified activity. Respondents were asked to select each activity that they perform on each of their respective devices. I note, for example, that 55% of all Xbox owners reported using their Xbox to view videos and 46.4% of all Xbox owners reported using their Xbox to download and/or stream content. The largest confidence interval around these numbers would be at +/- 5.5%. The results indicate that Xbox users use their game console as a media hub, with a large number of respondents using their Xbox console to view videos, download and/or stream content, and view live HD television broadcasts.

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[4] Weighting based on demographics was obtained both for respondents who completed the entire survey and for those who were disqualified.

Activity	Usage of Xbox Console	Usage of Blu-Ray Player	Usage of Smart TV
	N = 499	N = 295	N = 499
Viewing videos	55.0%	73.7%	47.1%
Downloading and/or Streaming Content	46.4%	32.0%	32.5%
Viewing live HD television broadcasts	18.0%	19.8%	30.9%
Gameplay Offline	77.8%	35.0%	41.7%
Gameplay Online	72.6%	36.0%	35.6%
Other, specify	1.5%	2.3%	0.7%
None of the Above	2.4%	4.6%	0.0%

Table: 5

1b   The survey results indicate that, on average, Xbox users spend 13.5 hours per week on their consoles. Table: 6 represents the average user's time spent with the Xbox console, broken out by activity.

Activity	Average time spent per week (Hours)
	N=499
Viewing DVDs	1.4
Viewing videos	1.4
Downloading and/or Streaming Content	1.5
Gameplay Online	4.6
Gameplay Off Line	4.4
Other, specify	0.1

Table: 6

1c   The survey results indicate that, on average, every Xbox user spends $364.1 on games, accessories and Xbox Live Points, in addition to their monthly Xbox Live subscription. This amount is comparable to, and in most instances 2-3x the amount of, what they likely paid to purchase the console itself. The results also show that 90.4% of all Xbox users subscribe to Xbox Live. Table: 7 shows the percentage of users that subscribe to each level of service currently offered by Microsoft.

Xbox Live Account Subscription	N = 499
Xbox Live Gold	47.9%
Xbox Live Free	30.5%
Xbox Live Gold Family Pack	12.0%
I do not subscribe to Xbox Live	9.6%

Table: 7

1d   The survey results also indicate that respondents primarily use Xbox Live for downloading and playing online games, for multi-player access, for watching streamed content, and for accessing YouTube. According to the survey, the most important drivers for changing subscription levels for Xbox Live were the ability to watch streamed content using applications such as Netflix, unlimited

online multiplayer access, and the ability to access social media. Table: 8 includes a detailed breakdown of the same.

Activities or Services	Accesed on Xbox Console	Reasons for Change of Xbox
	N= 499	N = 163
Access Facebook, social media	24.4%	28.6%
Access YouTube	36.4%	20.6%
Chat with friends face-to-face on your TV with Kinect	15.6%	23.5%
Download and play free games	45.9%	26.9%
Download Arcade and full Xbox 360 games	41.3%	28.4%
Listen to music with a Zune Music Pass and iHeartRadio	17.6%	18.9%
Member-only deals and previews	23.7%	24.5%
Rent or buy HD movies	19.5%	20.8%
Search powered by Bing	18.5%	18.6%
Unlimited online multiplayer with other gamers wherever they are located	41.6%	32.2%
Update games by downloading new songs, workouts and levels	26.6%	23.2%
Use as an AT&T U-Verse set-top box	7.7%	14.2%
Use Avatar Kinect to chat with friends as your avatar mirroring gestures and expressions	14.9%	15.4%
Watch live sports and highlights on ESPN	21.4%	21.0%
Watch streamed content using installed application, such as Netflix, HBO GO, VUDU	33.8%	38.7%
Watch TV episodes with Hulu Plus	19.5%	25.5%
Watch videos or movies or movies stored on hard drive or USB	28.2%	23.9%
None of the above	4.5%	4.5%
Other, specify	0.6%	1.7%

Table: 8

1e   The survey results further indicate that 54.0% of all Xbox users have watched Progressive-encoded videos. Of the respondents who reported using their Xboxes to watch video content, 16.0% specifically identified that content as MBAFF (Table: 9).

Type of Video Content Viewed on Xbox Console	N= 499
Progressive	54.0%
MBAFF(Macroblock Adaptive Frame/Field)	16.0%
Not sure	57.4%

Table: 9

1f   The results in the table below (Table: 10) indicate the desirability ratings provided by the Xbox users for: (1) the ability to play Blu-ray disks on their Xbox consoles; (2) the ability to watch video content on websites using Internet Explorer on Xbox; and (3) the ability the decode H.264 encoded video on their Xbox consoles.

Desirability Rating N = 499	Ability to Play Blu-ray Disks	Ability to View Video Websites	Ability to Decode H.264-Encoded Video
Completely Desirable	23.4%	27.7%	20.8%
Desirable	30.7%	28.3%	30.5%
Neutral	33.3%	32.9%	39.7%
Undesirable	6.6%	6.2%	4.8%
Completely Undesirable	6.0%	5.0%	4.2%

Table: 10

2.   **Market Value for the Improvement of a Feature (MVAI).**

The market's value for the improvement of a feature (MVAI) is also referred to as the "willingness to pay price." We compute the MVAI using the following steps:

> **Step 1**: Compute the utility function for the sample of respondents that corresponds to the population of customers for which the MVAI is to be determined. The utility function is an equation that represents the sum of the part-worth utilities for each feature in a profile—in this case, using an additive model. The computation for the part-worth utility function is performed using the CBC/HB software program;
>
> **Step 2:** Compute the average utilities across the sample;
>
> **Step 3**: Compute the utility difference across the improvement levels of the feature of interest;
>
> **Step 4:** Compute the utility per dollar from the price utility function; and
>
> **Step 5**: Take the ratio of Step 3 divided by Step 4 to obtain the MVAI for the feature.

The willingness-to-pay, or MVAI, can also be computed using market simulation results.   Both approaches produce identical results.

The weighted MVAI numbers computed during this survey are shown here. (Table: 11)

Attribute	Weighted MVAI	Lower confidence Level	Upper confidence Level
Built-in Wi-Fi compatible with B/G/N networks	$95.32	$79.31	$110.71
Built-in Wi-Fi compatible with B/G networks	$93.10	$77.37	$108.23
No Built-in Wi-Fi but has the ability to accept Wi-Fi Adapter	$48.53	$39.89	$56.92
Xbox capable of streaming games movies or listen to music uninterrupted	$89.93	$73.69	$105.83
Stream or download HD video content	$30.74	$23.11	$38.21
H.264 (Decoding capability)	$19.56	$13.28	$25.76
Watch HD Live Television, HD Movies from USB Ports and Blu-Ray Discs	$54.43	$41.60	$66.98

Table: 11

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VI.   Results of A Survey Measuring Usage and User Valuation of 802.11

The results of the survey are divided into two sections. The first section includes usage data for the 802.11 standard and the second section reports the market's value for the improvement of a feature (MVAI).

1.   **Usage**

   1a   Usage of the 802.11 standard was studied in a separate, stand-alone survey. A total of 24319 respondents were contacted. Of those contacted, 561 cleared the screening criteria specified earlier and completed the survey.

   1b   The survey results indicate that 100% of Xbox users have connected to the internet using, at least, one of the options presented. Table: 12 shows the percentage of users that selected each of the available connection mechanisms and their most commonly-used methods of connecting. These numbers suggest a high need for Wi-Fi connectivity among users.

Types of Connectivity N =561	Connectivity	Connectivity Most Often
Using a hard wired connection	52.6%	40.9%
Using an internal Wi-Fi	44.5%	36.1%
Using an external Wi-Fi network adapter	38.5%	23.0%

Table: 12

   1c   The survey results also indicate that, of the respondents who connect to the internet using an external Wi-Fi network adapter, 81.8% of them had purchased it separately. The results on the incremental amount spent on this external network adapter are shown in the table below (Table: 13). The majority of those who purchased the Wi-Fi network adapter paid more than $50.00 for that device.

Cost of the External Network Adapter	
N = 81	Percent
Below $25.00	8.6%
$25.00 or more but less than $50.00	35.8%
$50.00 or more but less than $75.00	23.5%
$75.00 or more but less than $100.00	11.1%
$100.00 or more but less than $125.00	11.1%
$125.00 or more but less than $150.00	6.2%
Above $150.00	-
Do not know	3.7%

Table: 13

   1d   The survey further shows that that 84.4% of respondents in the Wi-Fi survey report using security settings on their home networks. Table: 14 provides additional information on the type of networks used by respondents.

Network to Connect to Internet	
N = 561	Percent
WEP	28.0%
CCMP	19.6%
TKIP	12.7%
Do not know	28.3%

Table: 14

2. **Market's Value for the Improvement (MVAI)**

2a   My method of calculating the MVAI is detailed in Section V.2 of this report.

2b   The weighted MVAI numbers for the 802.11 survey are shown here (Table: 15).

Attribute	Weighted MVAI	Lower confidence Level	Upper confidence Level
Built-in Wi-Fi compatible with B/G/N networks	$127.60	$113.41	$141.62
Built-in Wi-Fi compatible with B/G networks	$125.55	$111.48	$139.45
No Built-in Wi-Fi but has the ability to accept Wi-Fi Adapter	$50.33	$44.47	$56.19

Table: 15

I reserve the right to supplement my opinions after I have and the opportunity to review expert reports or other materials from Microsoft or other additional documents or materials that are brought to my attention.

(Add)

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